

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte YASUMICHI KUWAYAMA, MASANORI ONUMA and NOBUYUKI ASAKURA

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U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Appeal No. 2005-2300
Application No. 09/910,872

HEARD: December 13, 2005

Before FRANKFORT, NASE, and BAHR, Administrative Patent Judges.
NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection (mailed March 4, 2004) of claims 1, 2, 6, 7, 9 and 10, which are all of the claims pending in this application.¹

We REVERSE.

¹ Claim 4 was canceled subsequent to the final rejection.

BACKGROUND

The appellants' invention relates to "an improvement in an electric connecting terminal, wherein tips of at least one pair of piercing portions erected on both side edges of a plane portion of the electric connecting terminal penetrate through a coating and a conductor in a flat circuit body and then the tips is fold [sic, are folded] in such a direction as to approach each other, thereby connecting the electric connecting terminal to the flat circuit body" (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Narozny	4,371,225	Feb. 1, 1983
Byczek et al. (Byczek)	4,561,714	Dec. 31, 1985

Claims 1, 2, 6, 7, 9 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Byczek in view of Narozny.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the answer (mailed December 6, 2004) for the examiner's complete reasoning in support of the

rejections, and to the brief (filed October 4, 2004) and reply brief (filed February 4, 2005) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. Upon evaluation of all the evidence before us, it is our conclusion that the evidence adduced by the examiner is insufficient to establish a prima facie case of obviousness with respect to the claims under appeal. Accordingly, we will not sustain the examiner's rejection of claims 1, 2, 6, 7, 9 and 10 under 35 U.S.C. § 103. Our reasoning for this determination follows.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A prima facie case of obviousness is established by presenting evidence that would have led one of ordinary skill in the art to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) and In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

With this as background, we analyze the prior art applied by the examiner in the rejection of the claims on appeal.

Byczek's invention relates generally to electrical connectors and, more particularly, to connectors for use with flat, flexible cables. Figure 1 of the drawings shows an electrical cable assembly 10, a plurality of contact elements 12 and a dielectric housing 14 for the contact elements. The ribbon cable 10 has a plurality of tubular or flat conductors 16 that are enclosed in a dielectric material 18 (see Figure 2). As shown in Figures 5-7, the contact elements 12 each consists of an elongated conductive metal member 20 that has a penetrating or first end 22 and a mating contact or second end 24. The penetrating end 22 consists of a generally elongated flat rectangular body member 26 having a plurality of pairs of tangs 28, 30 and 32 extending from opposite lateral edges thereof. It will be noted that the pair of piercing tangs 32 are of slightly greater length than the pairs of piercing tangs 28 and 30. The pair of piercing tangs 32 are axially offset from each other and each tang has a sharp point 34. Utilization of six such tangs allows the manufacturer to reduce the thickness of the tangs, which can then pierce entirely through the metal conductor and be crimped on the opposite side of the dielectrical material. In assembly of the cable assembly, a contact element is generally aligned with the end of the ribbon cable in overlapping relation, with a conductor 16 therein and all of the contact elements are

then simultaneously attached thereto by having the piercing elements 28, 30 and 32 pierce directly through the dielectric material and the metal conductor and then be crimped over at the opposite side, as clearly illustrated in Figures 2 and 3. After all of the contact elements 12 have been attached to respective conductors, the housing 14 is telescoped over all of the contact elements simultaneously.

Narozny's invention relates generally to electrical connections for flat multiconductor cable and pertains more particularly to connectors of type having insulation-piercing capability for making connection with cable conductors and also providing terminals extending outwardly of the cable for providing contact with accessory circuitry. As shown in Figure 1, flat cable 10 includes a plurality of rectangular cross-section elongate conductors 12 within electrically insulative casing 14. A connector 16 is shown assembled with flat cable 10 at an end margin thereof. Connector 16 includes a terminal or contact portion 20 formed as an extension of web portion 22. As shown in Figures 2-4, web portion 22 includes side margins 26 and 28, from which extend respectively first and second pairs of sharpened teeth. Longitudinally spaced teeth 30 and 32, comprising one pair, extend generally orthogonal to the web portion coincident with side margin 26. Teeth 34 and 36, longitudinally spaced in respective lateral opposition to teeth 30 and 32, comprise the second teeth pair and extend generally orthogonal to web portion 22, coincident side margin 28. Notch teeth

38 and 40 may be disposed longitudinally between the teeth of each pair. As indicated in Figure 4 particularly, tooth 36 includes a chamfered or tapered surface 36a at its end distal from web portion 22 and tapering outwardly to side margin 28. Tooth 34 is of identical configuration to tooth 36. Figure 4 also indicates the configuration of opposed tooth 32 as having a chamfered surface 32a at its end distal from web portion 22 and tapering also outwardly to side margin 26.

Side margins 42 and 44 of Narozny's connector 16 are situated laterally opposite one another, each laterally outwardly of corresponding side margins 26 and 28. A pair of teeth 46 and 48 extend generally orthogonal to end section 50 of web portion 22, section 50 being a plane parallel to the plane of web portion 22 and joined thereto by inclined web section 52. Figure 4 shows teeth 46 and 48 to include chamfered surfaces 46a and 48a at ends thereof distal from web section 50. These chamfered surfaces both taper laterally inwardly of side margins 42 and 44.

Narozny teaches (column 3, lines 13-57) that:

In a preferred practice, the respective lateral spacings between tooth pairs 30,32 and 34,36 are selected to be of measure D_1 (FIG. 1), i.e., a distance not greater than the width of conductors 12 of flat cable 10. By this preselection, teeth 30-36 and notch teeth 38 and 40 may be placed in common registry with a conductor 12 of flat cable 10. Upon forcing of the cable onto connector 16 by suitable tooling, all such teeth pierce the underside of cable insulation 14, penetrate and pass through conductor 12 and pierce and pass through insulation

14 above the conductor. The upper portions of the teeth may now be rolled or otherwise deformed downwardly upon cable 10, as indicated in FIG. 1.

The lateral spacing between teeth 46 and 48 is selected to be of measure D_2 (FIG. 1), i.e., a distance sufficiently in excess of the width of conductors 12 to insure that side margins 42 and 44 and the totality of teeth 46 and 48 are disposed outwardly of conductor 12 when teeth 30-36 are disposed, as above discussed, in confronting relation to conductor 12. Upon forcing of the cable onto connector 16, teeth 46 and 48 pierce insulative casing 14 only and do not confront conductor 12. Upon seating of web section 50 against the undersurface of cable 10, teeth 46 and 48 extend fully above cable 10 and are forced downwardly thereon, to reach the configuration shown in FIG. 1. Teeth 46 and 48 may be conveniently shaped in triangular fashion, such that they interleave with one another to provide a continuous rectangular surface atop cable 10 upon crimping thereon.

As noted above, the chamfered surfaces of teeth 30-36 in a direction outwardly of center line CL (FIG. 4), thereby providing the sharpened tips of the teeth interiorly of the margins of conductor 12. Conversely, the chamfered surfaces of teeth 46 and 48 extend inwardly toward connector center line CL, thus providing that the sharpened tips of teeth 46 and 48 pierce insulation of flat cable 10 substantially outwardly of conductors 12. The effect of the chamfered surfaces of teeth 30-36 is to direct the sharpened portions thereof inwardly toward center line CL, assuring communication of teeth 30-36 with conductor 12. Conversely, the chamfered surfaces of teeth 46 and 48 serve to assure that the sharpened tips of these teeth will remain in piercing relationship only to the cable insulation 14.

In our view, the teachings of Narozny would not have made it obvious at the time the invention was made to a person having ordinary skill in the art to have modified the contact element of Byczek so as to arrive at the claimed subject matter for the reasons set forth by the appellants in the brief and reply brief. In short, since the pair of piercing tangs 32 of Byczek pierce directly through the metal conductor 16 as well as the

dielectric material 18, the teachings of Narozny would have, at best, made it obvious to taper the tangs 32 of Byczek outwardly as suggested and taught by teeth 32 and 36 of Narozny. Absent the use hindsight knowledge derived from the appellants' own disclosure,² the teachings of Narozny would not have made it obvious to taper the tangs 32 of Byczek laterally inwardly since the teeth 46 and 48 of Narozny (which taper laterally inwardly) do not penetrate the conductor 12 of the cable 10.

For the reasons set forth above, the decision of the examiner to reject claims 1, 2, 6, 7, 9 and 10 under 35 U.S.C. § 103 is reversed.

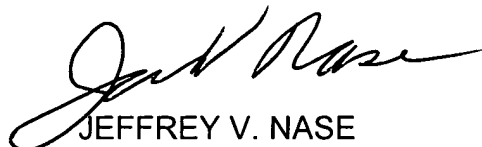
² The use of such hindsight knowledge to support an obviousness rejection under 35 U.S.C. § 103 is, of course, impermissible. See, for example, W. L. Gore and Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).


CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 2, 6, 7, 9 and 10 under 35 U.S.C. § 103 is reversed.

REVERSED


CHARLES E. FRANKFORT
Administrative Patent Judge


JEFFREY V. NASE
Administrative Patent Judge


JENNIFER D. BAHR
Administrative Patent Judge

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